MASS TREATMENT OF FILARIASIS IN SIDONDO, CENTRAL SULAWESI

J. Putrali* and J.M. Caleb*

Pengobatan massal terhadap penyakit Kaki Gajah telah dilakukan pada penduduk desa Sidondo, Sulawesi Tengah dengan menggunakan obat Filarzan, (diethylcarbamazine citrate).
Delapan puluh tiga per cent dari penduduk telah tercakup pada pengobatan ini dan delapan puluh sembilan per cent dari penderita yang mengandung bibit penyakit ini dalam darahnya dapat disembuhkan.
Gejala-gejala samping ditemukan pada penderita dan reaksi dari pengobatan yang ditemukan diantara penduduk yang tidak melihatkan gejala.

The Palu valley of Central Sulawesi (Indonesia) is an endemic area for Brugia malayi-filariasis (Tesch, 1937). The vector is *Anopheles barbirostris* (Brug, 1937). Surveys in 1971 (Sri Oemijati et al, unpublished) revealed a microfilaraemia (M.F.) rate ranging from 11 to 31 per cent in several villages. The same survey indicated that the parasite was of the nocturnal periodic type.

The present study was designed to provide guidelines for future treatment of filariasis in the entire valley. For this purpose we selected Sidondo village, because it had the highest prevalence (31 per cent) of positive cases amongst those surveyed in 1971.

MATERIALS AND METHODS

Sidondo is located about the middle of Palu Valley, 10 to 20 M. above sea level, with mean daily temperature about 30°C. Rainfall is approximately 500 mm. a year with the rainy season occuring between October and February.

The study population consisted mostly of small farmers, who work on dry and wet fields around the village. Corn, tobacco, and coconuts are grown in addition to rice. Most of the inhabitants are Kailiers, autochtonous inhabitants of Palu valley, but included are some Buginese families from South Sulawesi.

The study was conducted in two steps : Survey I and mass treatment, July 1972 Survey II evalution, October 1972.

Survey I and mass treatment was by a team of 10 persons headed by physician who stayed in the village 10 days. They mapped the area, numbered the houses and conducted a census. There are 1970 people and 299 houses in the village. Ninety-nine families were selected at random and asked to come to the medical post for bleeding. Finger blood was taken after 7.30 p.m. with a 20 cubic millimeter pipet. Thick smears were made and stained with Giemsa the next morning. Filarzan (diethyl carbamazine citrate) tablets were given with a total dose of 30 mg per kg body weight: 5 mg/kg body weight for six consecutive days. Patients came to the post six times. Each day after receiving Filarzan, which was ingested in our presence, they were asked about side-effects. Home visits were arranged for those unable to come to the post. Some individuals from outside the sample group also came to the post. They were not bled but received the same dose of Filarzan as those in the sample.

Survey II was held by the same team, and 83 families selected at random for study. Blood examinations were done as in survey I, and m.f. positive persons found in survey I were re-examined.

RESULTS

In Sidondo, 1502 of the 1970 (83.9 per cent) inhabitants were treated. Of these, in the first survey 514 (28.7 per cent) were examined, and 388 (21.7 per cent) were examined in survey II.

* Provincial Health Service of Central Sulawesi, Palu.

Table 1. Microfilaraemia by age and sex before treatment.

Age Group (Years)	TOTAL			MALE			FEMALE		
	No. Exd.	No. Pos	Percent Pos	No.Exd.	No. Pos	Percent Pos	No.Exd.	No. Pos	Percent Pos
1 – 6	96	11	11,5	43	3	7	54	8	16,5
7 – 12	88	32	36	46	18	39	42	14	33
13 – 18	86	28	32,5	42	12	28,5	44	16	36
19 – 24	60	18	30	38	12	31,5	22	6	37
25 – 30	48	15	31	23	8	35	25	7	28
31 – 36	41	13	38	14	6	43	27	7	25
37 – 42	28	101	36	15	8	53	13	2	15
43 – 48	24	8	33	15	5	33	9	3	33
49 +	43	12	28	23	8	24	19	4	21
TOTAL	514	147	28,5	259	80	30,8	255	67	26,2

Table I gives microfilaraemia distributions by age and sex in survey I. The M.F. rate is lowest in age group 1 – 6 (11.5 per cent), is higher in the following age groups and reaches a maximum in the 31 – 38 age group (38 per cent).

In those above 49, the rate was only 28 per cent. The m.f. rate for males was 30.8 per cent, in females 26.2 per cent, and the overall rate 28.5 per cent. The youngest m.f. positive persons were a two year old boy and girl. The oldest was a 77 year old man. The highest m.f. count was 165 per 20 cubic millimeter. Ninety of 147 m.f. positive persons had counts of 1 – 10.

Fifteen hundred and two persons were treated in Sidondo, a coverage of 83.9 per cent. In this mass treatment, an average of 22½ Filarzan tablets, used per person, (100 mg. per tablet) were for a total of 33804. Two hundred eighty-eight persons were not treated: 60 were pregnant, 77 were infants, 21 were elderly, 59 were sick, 5 refused treatment, and in 66 cases the reasons for non-treatment is unknown.

Table 2 gives microfilaraemia distributions by age and sex in survey II.

The highest m.f. rate was in age group 19 – 24. The rate in males was 4.5 per cent, in females 4.2 per cent. The total m.f. rate was 4.3 per cent. The youngest m.f. positive was boy aged 5 years, and the oldest a man aged 35. (There were 147 m.f. positive persons in survey I before treatment. Were-examined 140 after

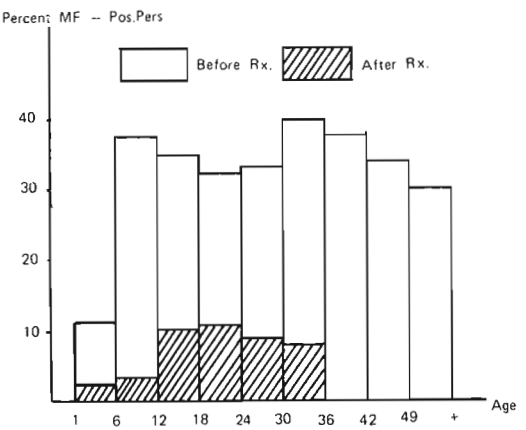
Table 2. Microfilaraemia by age and sex after treatment.

Age Group (Years)	TOTAL			MALE			FEMALE		
	No.Exd.	No. Pos	Percent Pos	No.Exd.	No. Pos	Percent Pos	No.Exd.	No. Pos	Percent Pos
1 – 6	84	1	1	44	1	2	40	0	0
7 – 12	62	1	1,5	32	1	3	30	0	0
13 – 18	49	5	10	23	2	8,5	26	3	11,5
19 – 24	38	4	10,5	20	2	10	18	2	11
25 – 30	52	4	7,5	24	1	4	28	3	10,5
31 – 36	30	2	6,5	15	2	15	15	0	0
37 – 42	27	0	0	15	0	0	12	0	0
43 – 48	11	0	0	3	0	0	8	0	0
49 +	35	0	0	22	0	0	13	0	0
TOTAL	388	17	4,3	198	9	4,5	190	8	4,2

Table 3. Summary of mass treatment results.

BEFORE TREATMENT						THREE MONTHS AFTER TREATMENT					
No. Exd.	No. Pos.	Percent	Total m.f. count	Average M.F count in 20 cu mm blood/ Pos	Total	No. Exd.	No. Pos.	Percent	Total m.f. count	Average m.f count in 20 cu mm blood/ Pos	Total
514	147	18,9	2933	19,95	5,70	388	17	4,38	78	4,59	0.2

Fig. 1. Trial by age group and microfilaria rate in Sidondo, October 1972.



treatment, and found 125 negative, for a cure rate of 89 per cent). Fifteen persons were still infected after treatment (treatment failures), as shown in Table 4.

Table 5 lists side-effects of the treatment in m.f. positive and negative persons.

Table 3 summarizes results of our trial. The m.f. rate was lowered from 28.9 to 4.38 and the average m.f. count per positive decreased from 20 to 4.6. The result of trial by age-group and microfilaria rate was shown in figure 1.

Side-effects and the m.f. count were also compared. In m.f. positive persons, 41 per cent developed fever, while in the negative group only 18 per cent became febrile. The m.f. count group 11 – 25 had the most side-effects. Shock was a side-effect but it was not found in this study.

Table 4. Individuals still m.f. positive after treatment.

No.	Sex	Age	M.F. count Before treatment	M.F. count After treatment
1.	F	18	26	6
2.	M	25	77	19
3.	M	18	2	2
4.	M	14	11	2
5.	M	51	1	1
6.	M	60	15	2
7.	F	10	21	11
8.	M	17	38	1
9.	M	21	12	1
10.	M	22	15	1
11.	F	18	11	67
12.	M	12	56	29
13.	F	28	2	2
14.	F	28	8	1
15.	F	28	71	1

Table 5. Side effects from Filarzan.

A. **M.F. Positive (147 treated)**	No.	Per cent
1. Fever	61	41
2. Vomiting	22	15
3. Dizziness	18	12
4. Abdominal pains	16	11
5. Lymphadenitis	9	6
6. Lymphangitis	4	3
B. **M.F. Negative (367 treated)**	No.	Per cent
1. Fever	67	18
2. Abdominal pains	11	3
3. Vomiting	8	2
4. Dizziness	8	2
5. Lymphadenitis	5	1
6. Lymphangitis	3	0,8

DISCUSSION

Mass treatment with 5 mg/kg body weight of Filarzan on 6 consecutive days seemed successful. Most of the population was reached, and the decrease in persons with microfilaraemia was dramatic (28.9 to 4.4 per cent).

Table 6. M.F. counts and side effects.

M.F. Count	No. Treated	Fever		Lymphadenitis		Vomiting	
		No.	Per-cent	No.	Per-cent	No.	Per-cent
0	367	67	18	5	1	8	2
1 – 10	90	35	39	7	8	12	14
11 – 25	28	17	60	2	7	5	18
26 – 50	12	3	25	0	0	0	0
51 – 100	13	6	46	0	0	5	38
100 +	7	1	14	0	0	0	0

ACKNOWLEDGEMENTS

The authors wish to thank Prof.Dr. J.Sulianti Saroso, Director General for Communicable Disease Control/Chairman of National Institute of Medical Research, Ministry of Health, Jakarta and her staff for her encouragement and support of this study.

We thank Dr. P.F.D. van Peenen and Dr. J.H. Cross of NAMRU–2 for assisting in preparation of the manuscript. The governor of Central Sulawesi M. Yasin, who kindly made available funding for this project.

Comparable results were obtained by Harinasuta et al (1970) in Thailand, who used diethyl carbamazine, 5 mg/kg once weekly for 6 weeks. and lowered m.f. positive rates from 21.2 to 2.2 per cent. Cure rate in this study was 89 per cent, and treatment on successive days more practical in our campaign.

Fever and vomiting were the dominant side-effects in this trial. Localized side-effects such as lymphadenitis were uncommon. Infected persons had mode side-effects than m.f. negative persons, however, those with higher m.f. counts did not necessarily have more side-effects (Table 6).

REFERENCES

Brug, S.L. (1937) De vereeniging van Filaria malayi te Kalawara (o.a. Paloe, Res. Manado) Geneesk, Tijdschr, Nederl. Indie 77, 1462

Harinasuta, C.P. Charoenlarp, P. Guptavanij, S. Sucharit, T. Deesin, K. Surathin and S. Vutikes (1970). Observation on the six-year result of the pilot project for the control of Malayan Filariasis. Southeast Asian J. Trop. Med. Pub. Hlth. 1, 205

Tesch, I.W. (1937) Over filariasis en elephantiasis by een Geimporteerde Javaansche Bevolking in Celebes. Geneesk. Tijdschr. Indie, 77, 1434